EXHIBIT 1

IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF OHIO
WESTERN DIVISION (DAYTON)

PLAYTEX PRODUCTS, INC.,	:	CASE NO. C-1-02-391
	:	(Judge Rose)
Plaintiff,	:	
v.	:	
THE PROCTER & GAMBLE DISRIBUTING COMPANY, et al.,	:	EXPERT REPORT OF JAMES MOLLER, Ph.D., P.E.
Defendants.		

I. QUALIFICATIONS

I am an Associate Professor in the Department of Manufacturing and Mechanical Engineering at Miami University in Oxford, Ohio. A copy of my current CV, including a list of publications, is attached as Attachment A. I am a mechanical engineer, licensed in the state of Ohio, with considerable experience in both mechanical and manufacturing engineering. I am qualified to perform both experimental and theoretical work. I hold a Ph.D. in Mechanical Engineering from Rensselaer Polytechnic Institute, and Mechanical Engineering Degree from the Massachusetts Institute of Technology ("MIT"), an M.S. in Mechanical Engineering, also from MIT, and a B.S. in Mechanical Engineering from Case Western Reserve University.

At Miami, I have taught courses in a wide range of engineering topics. I have taught courses in Statics (which includes the analysis of forces among bodies), Mechanics of Materials (which includes analysis of the stresses and deflections of bodies in contact), Manufacturing Processes (which includes a fundamental understanding of injection molding and machining as well as quantitative assessment of manufactured products), Engineering Materials (which includes the mechanical properties of materials), Machine Design (which includes stress analysis, dimensioning, and surface finishes in the design of tooling and machinery), and Computer-Aided Experimentation (which includes quantification of measurement error). In addition, I have served as the faculty advisor to the Miami University student chapter of the Society of Plastics Engineers since its founding in 1997.

Throughout my career, I have learned and created many experimental methods. I have designed, built, and used many experimental apparatuses. This includes experimentation in instrument calibration, heat transfer, mechanical properties of solid materials, mechanical properties of viscous materials, and metallography.

Throughout my professional work, I have applied mathematics to solve problems. I have used mathematics to simulate the physical world as well as to analyze data. During my two summers as a NASA/ASEE Faculty Fellow, my research included development of statistical bases to detect faults in process controllers. I have performed research to simulate injection molding, machining, and forging. Among the mathematical methods of data analysis that I have performed are spectral analyses, confidence intervals, and neural networks. Since 1997, I have taught the Manufacturing Processes course at Miami University. Among the topics I teach is the use of aim and scatter tests to compare dimensions of manufactured products against specified tolerances. These tests enable the students to assess the quality of their manufactured components quantitatively. I am the member of my department who conducts the mathematics review session for the Fundamentals of Engineering exam. Among the topics we review are the equations that describe solid shapes.

II. PREVIOUS TESTIMONY AS AN EXPERT

None.

III. OPINIONS AND BASES FOR OPINIONS

I have been asked to give an opinion on whether P&G's Pearl Plastic product infringes claims 1-3, 9-10 of U.S. Patent No. 4,536,178 ("the '178 patent"). In my opinion the Pearl Plastic product does not infringe these claims. As a factual matter there are not "two diametrically opposed, substantially flattened surfaces" in the language of the claims.

My understanding is that in order to infringe a patent claim, an accused product must contain all of the limitations of the claim. A limitation is a word or phrase that defines a feature or element of the invention. I understand that Playtex is accusing the Pearl Plastic tampon product of infringing claims 1, 2, 3, 9 and 10. My understanding is that claims 2, 3, 9, and 10 are dependent claims, dependent on claim 1, so that if claim 1 is not infringed, claims 2, 3, 9, and 10 are not infringed, either.

In assessing infringement of claim 1, I was asked as a person of ordinary skill in the art of manufacturing processes and injection molding, and as an engineer familiar with applied mathematics, manufacturing processes, and dimensioning and tolerancing of plastic parts, to give my opinion of the meaning of the phrase "two diametrically opposed, substantially flattened surfaces" in claims 1, 9, and 10 and to then give my opinion on infringement of those claims. In the course of reaching my opinions I have reviewed the following materials:

- The '178 patent.
- The prosecution history of the '178 patent.
- Expert reports of Messrs. Evan Hutchison and Mario Turchi, presented by Playtex, in which Playtex asserts that claims 1-3 and 9-10 of the '178 patent are infringed.
- Samples of the Pearl Plastic product.

- Drawings 4360-01-A , 4359-01-A , 4358-01-A , and 4298-01-A of the Pearl Plastic product (Attachment B).
- D.J. Whitehouse, *Handbook of Surface Metrology*, IOP Publishing, 1994 (excerpts of which are in Attachment C).
- R.L. Burden and J.D. Faires, *Numerical Analysis*, 4th ed., PWS-Kent, 1989 (excerpts of which are in Attachment D).
- *Fundamentals of Tool Design*, SME, 1998 (excerpts of which are in Attachment E).
- H. Flanders and J.J. Price, *Calculus with Analytic Geometry*, Academic Press, 1978 (excerpts of which are in Attachment F).
- R.C. Hibbeler, Mechanics of Materials, 3rd ed., Prentice Hall, 1997 (excerpts of which are in Attachment G).
- G. Bertoline, E.N. Wiebe, C.L. Miller, and L.O. Nasman, *Technical Graphics Communication*, Irwin, 1995 (excerpts of which are in Attachment H).
- Webster's New Collegiate Dictionary, 1951 (excerpts of which are in Attachment I).
- Additional references (listed in Attachment J).

I further understand that the Court will construe the meaning of the asserted claims. I reserve the right to amend or supplement this report if the Court interprets the terms or claims in a way that causes me to re-evaluate or re-examine this report.

A. The Meaning of "Substantially Flattened Surfaces"

My understanding is that in determining the meaning of a term in a patent claim one may consult the language of the claim itself; the specification of the patent; and the prosecution history. If the meaning of the term is not clear from these sources (the intrinsic evidence), then one may consult extrinsic evidence, which includes such sources as dictionaries, treatises, and the views of experts.

My understanding is that the meaning of a term in a patent claim must be defined in terms of structure rather than solely by its function.

The term "substantially flattened surfaces" has no plain meaning, as the word "substantially" is not a term of any accuracy. It has no generally understood meaning to those of skill in the art. I confirmed that assessment through my exhaustive review of the sources found in Attachments C, E, H and J. I therefore turn to the specification, which, it is my understanding, is viewed as the single best guide to the meaning of a term used in a claim.

The specification of the '178 patent discloses two embodiments of a thumb and finger hold. In the first, the one illustrated in the drawings, the surfaces appear flat except for protrusions that the specification terms "ribs or treads." Col. 4, 1. 18.

The specification also states that "[t]he surfaces 30 may also be provided with a concavity or arcuate depression (not shown) configured to complement the curvature of a user's fingers." Col. 4, 11. 21-24.

The term "substantially flattened surfaces," to the extent it has any meaning, thus refers to a flat surface. The specification does not indicate that the patent claims a convexity, which would not "complement the curvature of a user's fingers." One of skill in the art would view the requirement of flatness as lying within a geometric tolerance of flatness.

In sum, the specification discloses two planar – flat – surfaces on which "ribs or treads" are interspersed or on which a "concavity" is located. Col. 4, 11. 17-24. The specification thus indicates that "substantially flattened" requires flattened surfaces to which have been added either protrusions in the form of "ribs or treads" or a depression. The specification does not support an interpretation in which the surfaces are permitted to be entirely curved. It also does not support an interpretation in which the surfaces are permitted to be convex. Even where there is a concavity, for example, it is in the context of an otherwise flattened surface ("The *surfaces* 30 may also be provided wth a *concavity* " (emphasis added)).

Extrinsic sources, to the extent that it is necessary to consult them, do not support an interpretation that permits an entirely curved surface to be called "substantially flattened." A surface is flat when all points in it lie in the same plane. Flatness is a condition in which all elements of a surface are in the same plane (Attachment E). When a product or a geometric feature of a product is designed to be flat, a flatness tolerance may be specified. Attachment H. Flatness tolerance specifies a tolerance zone bordered by two parallel planes within which the entire surface must lie . Attachment E. This is an example of a geometric tolerance. Geometric tolerancing is a field of engineering that applies to, among other things, plastics manufacture. One geometric form tolerance is flatness. Attachments E, H. A surface may be flat within a tolerance of, for example, 0.001 inch. A surface with variations created by the manufacturing process of less than 0.001 inch would be flat within that degree of tolerance.

However, such degrees of flatness are relevant only where the manufacturer intends to create a flat surface. One would not specify or inspect the flatness of the surface of a part that was designed to have a surface entirely curved. When the product or feature is not designed to be flat, other geometric tolerances may be specified. For example, circularity, cylindricity, profile of a line, or profile of a surface may be specified. Attachment H. To the extent that Playtex would argue that "substantially flattened" means flattened within a given degree of tolerance, that view is inaccurate because the concept of flatness tolerance is applicable only to those surfaces designed and specified to be flat, rather than curved.

B. <u>Comparison of Claim 1 to the Pearl Plastic</u>

Based upon the foregoing discussion and my analysis of the Pearl Plastic product (described below), the rearward portion of the barrel of the Pearl Plastic does not have

"substantially flattened surfaces." I find the fact to be that no part of the surface of the rearward portion of the barrel is flat. It is entirely curved.

In reaching my opinion on the claim, I have focused on the both portions of the surface that do not include a raised pattern, the underlying surface from which the pattern is raised, and the degree to which the pattern follows the underlying surface. To explain my opinion, I will use at trial exhibits illustrating planar surfaces, round or curved surfaces, convexity and concavity, methods and steps of measurements, the steps I followed, and the facts that I found, as related in this report.

1. Definitions

In reaching my opinion, I used terms from and consistent with the practice of mathematics, engineering and manufacturing processes. There are several terms (listed below) as defined in these fields.

Function

A function is a relation among a dependent variable and one or more independent variables. For example, one coordinate of a point on a line could be described in terms of the other coordinate of the point. Attachment F. Also, if y is the dependent variable and it is a function of x, we would write $y = y(x)$.

Continuous

A function is continuous when it does not undergo step changes as the independent variable changes. Id.

First Derivative

The first derivative is the rate at which the value of a function varies as the independent variable changes. This is also known as the slope of the function. Slope is calculated at a selected value of the independent variable. The slope of a function may differ at different values for different values of the independent variable. When a function is discontinuous at a given point, the slope is undefined. For example, if y is the dependent variable and it is a function of x, the first derivative would be written (id.):

$$\frac{dy}{dx} \text{ or } y'$$

Second Derivative

The second derivative is the rate at which the slope of a function varies as the independent variable changes. This is also known as the concavity of the function. Concavity is calculated at a selected value of the independent variable. For example, if y is the dependent variable and it is a function of x, the second derivative would be written (id.):

$$\frac{d^2y}{dx^2} \quad or \quad y''$$

The second derivative may differ for different values of the independent variable. When a function is discontinuous at a given point, the second derivative is undefined.

The second derivative is also used to describe the convexity of the function. When the second derivative is greater than zero at a point, the function is said to be convex. If it is less than zero, it is said to be concave. The second derivative of a straight line is zero. A straight line would be said to be neither concave nor convex.

Curvature

When a function *y(x)* is continuous and has continuous first and second derivatives, the curvature at any point on the function can be described by (id.):

$$k = \frac{|y''(x)|}{\left(1+y'(x)^2\right)^{3/2}}$$

If one calculates the inverse of the curvature, that is (Attachments G, C):

$$\frac{1}{k} = R = \frac{\left(1+y'(x)^2\right)^{3/2}}{|y''(x)|}$$

one finds R, the radius of curvature of the function at the selected point on the function. The radius of curvature represents the radius of a circle that is tangent to the function at the selected point and which has matching first and second derivatives. These are accepted and generally recognized ways to calculate curvature and radius of curvature. The center of this circle is called the center of curvature. If a function describes a straight line, it would have an infinite radius of curvature. If another function describes a circle, the radius of curvature equals the circle radius. If we examine yet another function and find that at two points the radii of curvature differ, the point with the smaller radius of curvature is at a location where the function is curved more sharply.

Section

When a plane slices a three-dimensional object, the portion of the object lying in this plane is called the section (Attachment H). A section is a two-dimensional entity.

Concave and Convex

When the perimeter of a section can be described by a continuous function with continuous first and second derivatives, the radius of curvature and center of curvature can be calculated for any point along the perimeter. If the center of curvature lies to the inside of the perimeter, the perimeter is convex at this point. If it lies to the outside, it is concave. Attachment I.

2. Examination of the Pearl Plastic Product Design

I find no evidence that a flat surface was specified for the rearward portion of the Pearl Plastic product. I examined P&G drawings 4360-01-A, 4358-01-A, and 4359-01-A (Attachment B to this report). In particular, I examined the description of the rearward portion of the applicator barrel in each drawing. In the first two drawings, the shape is described by a major and minor dimension, two radii of curvature, and a draft angle. The curves centered at the 12 and 6 o'clock positions in the view are blended to meet the curves centered at the 3 and 9 o'clock positions. In the third drawing, the shape is described by a major and minor dimension, at least one radius of curvature, and a draft angle. In this drawing, the specification of an oval cross section by blending among the major and minor dimensions is also indicated.

A draft angle is included in each of the drawings. A draft angle here defines the taper of the rearward portion of the barrel. Any section perpendicular to the barrel centerline would show a perimeter that matched the section shown in the drawing or whose dimensions differed from it uniformly byan amount. This amount is determined by the draft angle and the distance between the section shown in the drawing and the section of interest.

3. Examination Of The Pearl Plastic Product

In addition to examining drawings of the Pearl Plastic product, I examined samples of the product to determine the curvature in the rearward portion of the barrel. I used a method that is generally accepted in the fields of engineering and manufacturing processes, and which is reliable. My approach was to examine and take accurate measurements from a series of sections perpendicular to the barrel axis. Photographs of the rearward portion of the barrel are shown in Figures 1 and 2. Also shown is a ruler marked in tenths of an inch. In order to survey the rearward portion of the barrel, I chose to section the Pearl Plastic product every tenth of an inch from the rear end. A detailed description of my procedure is given in Attachment K.

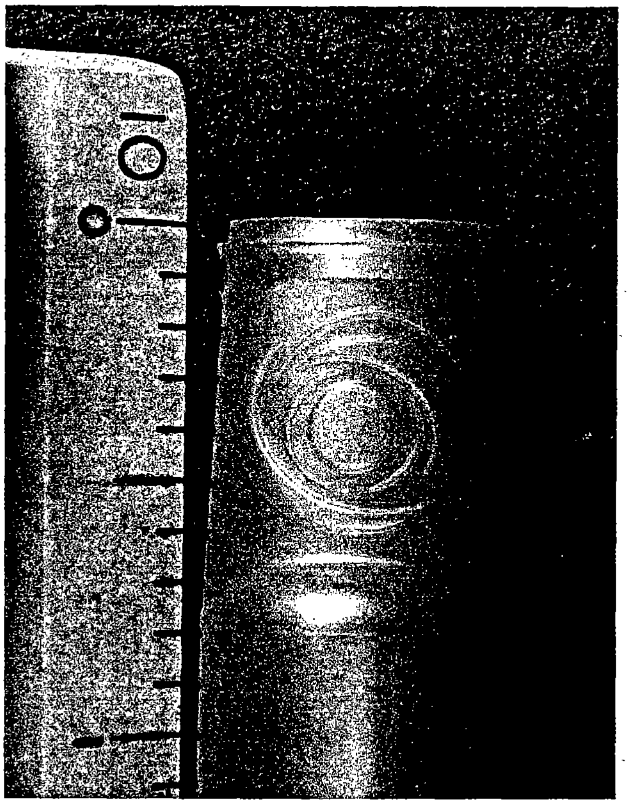

Figure 1. View 1 of the rearward portion of the barrel.

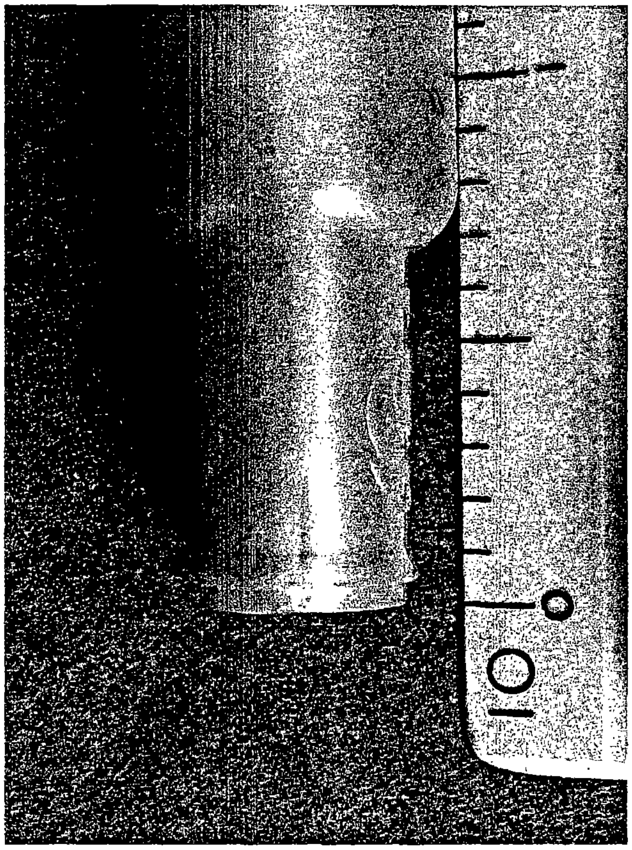

Figure 2. View 2 of the rearward portion of the barrel.

I photographed each section. An example is shown in Figure 3. Photographs of each section are in Attachment L. I subsequently measured coordinate locations along the perimeter of the section 0.1" from the rear end. A plot of these is shown in Figure 4. From these measurements, the radius of curvature along the section perimeter was calculated. A table of the results is given in Attachment M. The scatter in these values is indicative of the effect of some slight measurement uncertainty on the radius of curvature calculation. In general, uncertainty is present in any measurement as well as in quantities that derive from that measurement. In this case, the effect of uncertainty is sufficiently small that it does not prevent important conclusions from being drawn.

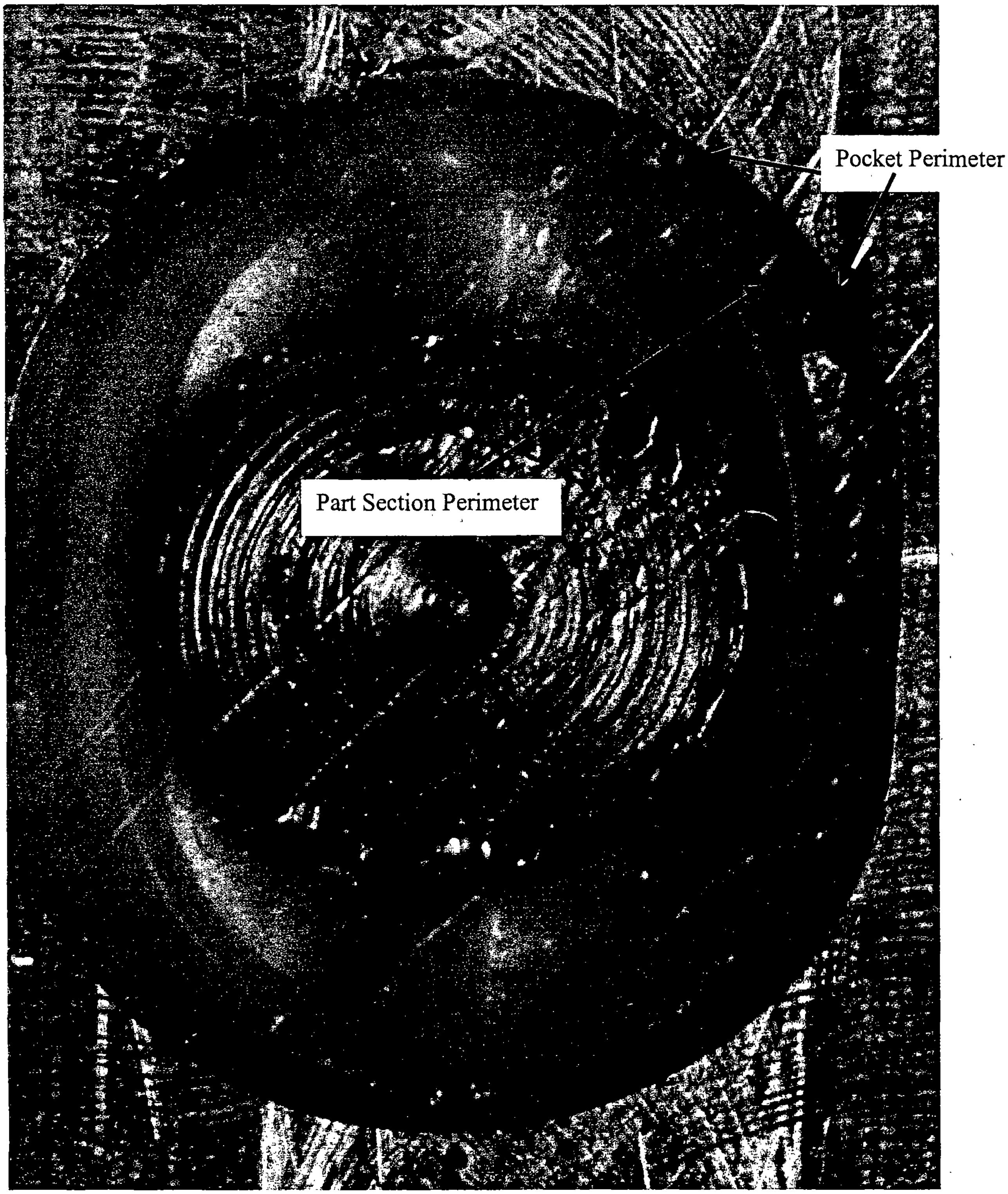

Figure 3. Photograph of the section plane measured 0.1" from the rear end. The part section perimeter and pocket perimeter are indicated.

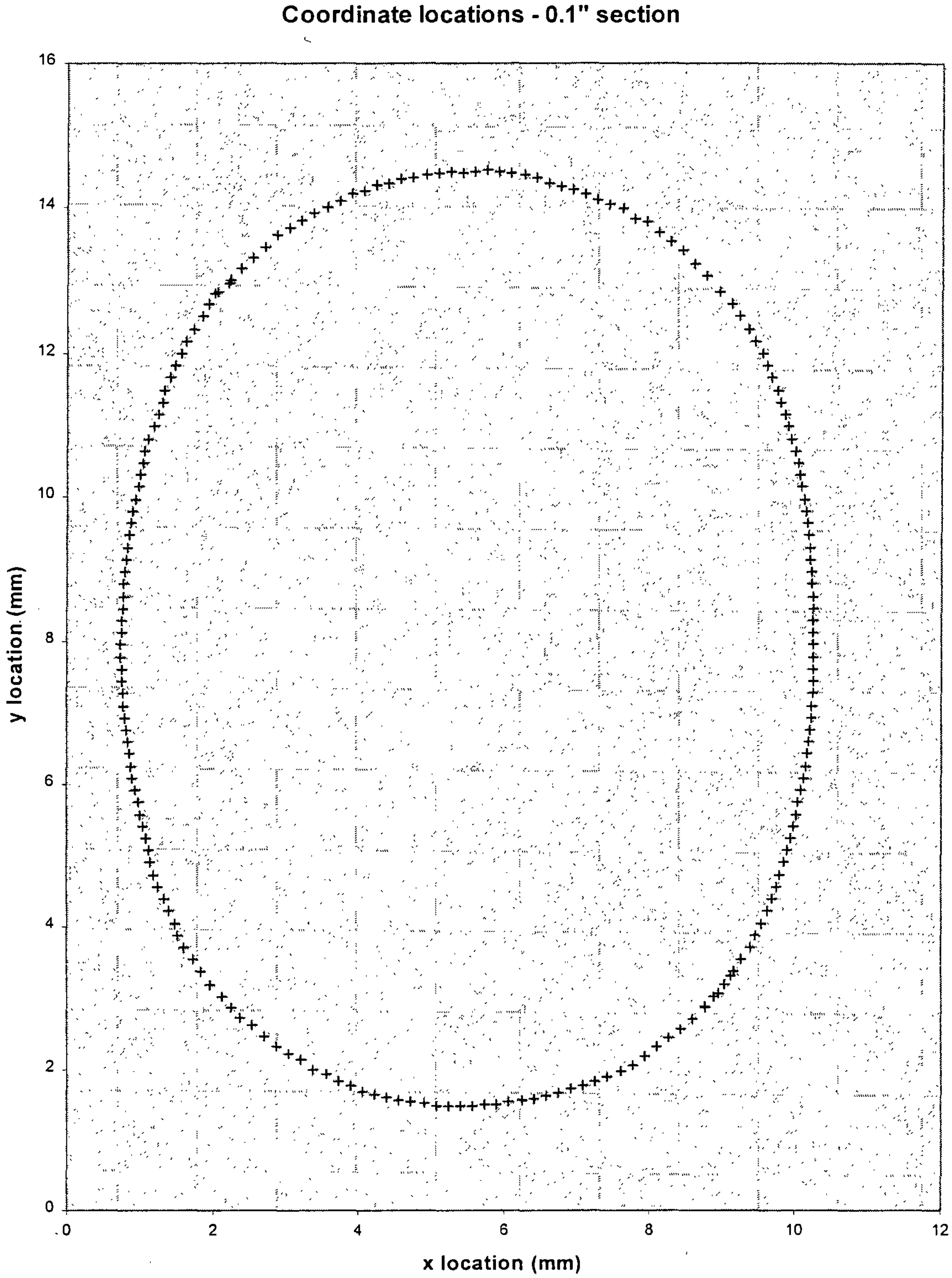

Figure 4. Plot of the coordinates of the perimeter points measured from the photograph shown in Figure 3.

This table in Attachment M proves several facts. First, all of the values of *R* are positive. This fact demonstrates that the perimeter is entirely convex. Second, none of the values are consistent with a flat surface within the scatter shown in the results. If any portions of the perimeter had corresponded with the intersection of the section plane and a flat surface of the product, then the radius of curvature would have approached infinity. If it was a flat surface and the effect of measurement uncertainty was included, the results would have presented themselves as very large positive and negative radii of curvature. This is not the case.

I also examined the photographs of the other five sections as well as the rear end of the product and concluded that this same measurement approach would yield similar results and the same conclusions.

C. Conclusions

The surfaces in question were and are designed and specified to be curved and convex. Those surfaces are, in fact, curved and convex, not flat or (in the language of the claims) "substantially flattened surfaces" in the P&G Pearl Plastic product. The product specification includes a form for the rearward portion of the barrel that is continuously curved. Such curvature and convexity is reflected in the manufactured product. A rearward portion of the barrel with a continuously curved, convex surface is not the device claimed in claim 1 of the '178 patent. As explained above, "substantially flattened" encompasses only flat surfaces to which either protrusions in the form of "ribs or treads," or a depression may have been added.

IV. COMPENSATION

I am being compensated for my time on this case at a rate of $150 per hour.

Date: 26 Nov 2002

James C Moller

James C. Moller, Ph.D., P.E.

A

JAMES C. MOLLER

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TEACHING INTERESTS

Development of course material with emphasis on fundamental engineering concepts & communication skills. Development of laboratory sessions to illustrate relations among process settings and quality attributes in manufacturing processes. Development of undergraduate level tools for learning mechanics of materials concepts and prediction of manufacturing process behavior.

RESEARCH INTERESTS

Simulation and experimental verification of energy & momentum transport in manufacturing processing of viscous and plastic materials including injection molding, forging, and machining. Neural network applications for sensor verification, quality prediction, and process control. Constitutive behavior of dense suspensions.

EDUCATION

Ph.D. in Mechanical Engineering
Rensselaer Polytechnic Institute, Troy, NY (90-94)
Thesis : *"Injection Molding of Filled Polymers"*
Advisor : Prof. Daeyong Lee

Mechanical Engineering Degree
Massachusetts Institute of Technology, Cambridge, MA (86-87)
Thesis : *"Measurement of Wall Shear and Wall Pressure Downstream of a Honeycomb Boundary Layer Manipulator"*
Advisor : Prof. Patrick Leehey

M.S. in Mechanical Engineering
Massachusetts Institute of Technology, Cambridge, MA (82-84)
Thesis : *"Study of Induction Swirl in an Off-Center Shrouded Valve Cylinder"*
Advisor : Prof. Wai Cheng

B.S. in Mechanical Engineering
Case Western Reserve University, Cleveland, OH (78-82)
Graduated w/highest honors. Designed bone fracture alignment device as senior project.

PROFESSIONAL HISTORY

Associate Professor
Department of Manufacturing Engineering
Miami University, Oxford, OH (01-present)

Assistant Professor
Department of Manufacturing & Mechanical Engineering
Miami University, Oxford, OH (95-01)

Expertise in analysis and modeling of materials and manufacturing processes. Developed numerous experimental methods. Created design activities in courses. Prepared for outcomes-based accreditation review. Academic advisement of departmental majors. Served on numerous committees.

NASA-ASEE Summer Faculty Fellow
Controls Branch
NASA Glen Research Center, Cleveland, OH (Summer 97 & 98)
Prepared innovative neural-network-based approach to sensor fault detection, isolation, and accommodation. Performed experiments in neural network training.

Post-doctoral Research Associate
R.P.I. (94-95) Troy, NY
Included of wall slip & yield models into injection mold filling simulation. Applied rapid prototyping to molding dies. Predicted viscous heating in capillary flows.

Research, Project, and Test Engineer
Calspan Advanced Technology Center (84-86,87-90) Buffalo, NY
Measured time-resolved gas turbine heat flux. Measured of performance degradation of aircraft engines. Designed low Mach number facility for heat flux measurements in large turbine stages. Designed valve for shock tunnel nozzle. Designed 30 foot fiberglass transonic expansion nozzle.

AWARDS & HONORS

Highest score in Ohio on the Mechanical Engineering Professional Engineer exam, 1997.
NASA-ASEE Summer Faculty Fellowship 97 & 98.
Best Paper of Session, Trends in Mech. Eng., ASEE Ann. Conf. 97.
Osgood Topping Fellowship. R.P.I. 90--93.
NSF Graduate Fellowship. 82--84, 86--87.
Case Alumni Assn. Merit Scholarship. 80--82.
CWRU undergrad. Mech.Eng. student best able to combine analysis w/expts. 82.

PUBLICATIONS

Journals

J.C. Moller and D. Lee, "Verification of Extensional Viscosity Effects in Injection Mold Filling Simulation", *Polymer Engineering & Science*, vol. 42, no. 2, pp. 307-325, (2002).

A.M. Kijak, J.C. Moller, and J.A. Cox, "Strengthening Silica Prepared by Sol-Gel Chemistry by Inclusion of a Polyamidoamine Dendrimer," *Journal of Sol-Gel Science and Technology*, vol. 21, no. 3, pp. 213-219, (2001).

J. Moller and A. Mokaddem , "A Tool for Learning Mohr's Circle," *International Journal of Mechanical Engineering Education*, vol. 29, no. 1, pp. 53-72, (2001).

J.C. Moller and D. Lee, "Development of a Design and Manufacturing Laboratory Course," *Journal of Engineering Design*, vol. 10, no. 1, pp. 39-57, (1999).

J.C. Moller, D. Lee, B.W. Kibbel and L. Mangapora, "Effect of Extensional Viscosity and Wall Freezing on Modelling of Mold Filling", *Polymer Engineering & Science*, vol. 35, no. 18, pp. 1440-1454, (1995).

J.C. Moller and D. Lee, "Constitutive Behavior of a Powder/Binder System at Molding and Debinding Temperatures", *International Journal of Powder Metallurgy*, vol. 30, no. 4, (1994).

M.G. Dunn, C. Padova, J.C. Moller and R.M. Adams, "Performance Deterioration of a Turbofan and a Turbojet Engine Upon Exposure to a Dust Environment", *Journal of Engineering for Gas Turbines and Power Transaction of the ASME* vol. 109, pp. 336-343, (1987).

P.F. Batcho, J.C. Moller, C. Padova and M.G. Dunn, "Interpretation of Gas Turbine Response Due to Dust Ingestion", *Journal of Engineering for Gas Turbines and Power Transaction of the ASME*, vol. 109, pp. 344-352, (1987).

M.G. Dunn, W.K. George, W.J. Rae, S.H. Woodward, J.C. Moller and P.J. Seymour, "Heat-Flux Measurements for the Rotor of a Full-Stage Turbine: Part II - Description of Analysis Technique and Typical Time-Resolved Measurements", *Journal of Turbomachinery*, vol. 108, pp. 98-107, (1985).

Proceedings

J.C. Moller, D. Shrader, K. Gu, J.R. Douglas, J. Gunasekera, G.W. Kuhlman, "Application of the Upper Bound Elemental Technique to Forging Process Design," Proc. Forging Technology Solutions Conf., Columbus, OH, 2-3 Oct. 2001, SME, Dearborn, MI (2001).

J.C. Moller and D.R. Shrader, "Process Design Tool for Rapid Estimation of Titanium Turning Cost," Proc. SAE AMTC 2000 Conference., SAE, Warrendale, PA, (2000).

O. Ettouney, K. Schmahl, J. Stenger, J. Moller, C. Noble, "Techniques for Assessment in a Successful ABET 2000 Accreditation Evaluation," Proc. ASEE Ann. Conf., Washington, DC, ASEE (2000).

J.C. Moller, J.S. Litt, and T.-H. Guo, "Neural Network-Based Sensor Validation For Turboshaft Engine," Proc. AIAA Joint Propulsion Conf., Cleveland, OH, (1998).

J.C. Moller and J.J. Rowe, "Prediction of injection molded part quality by neural networks," Proc. SPE Ann. Technical Conf., Atlanta, GA (1998).

J.C. Moller, M.C. Carlson, R. Alterovitz, and J. Swartz, "Post-ejection cooling behavior of injection molded parts," Proc. SPE Ann. Technical Conf., Atlanta, GA (1998).

J.C. Moller and A. Mokaddem, "A Tool For Teaching Stress Transformation by Mohr's Circle," Proc. ASEE Ann. Conf., Washington, DC, ASEE (1997).

J.C. Moller, "Manufacturing processes course with emphasis on modeling, experimentation, and design". Proc. ASME Ann. Meeting, (1997).

J.C. Moller, K.E. Schmahl, B.Bardes, and K.Shinn, "Design for Manufacturing Thread in a Manufacturing Engineering Curriculum", Proc. Frontiers in Education Conf., (1997).

J.C. Moller and O.M. Ettouney, "Insect Robots: Case Studies for Teaching Students about Computer Aided Experimentation," Proc. RCE II, Albuquerque, NM, ASCE (1996).

J.C. Moller and D. Lee, "Method for Measurement of Shear Heating in Capillary Flows," Proc. ANTEC '96, Indianapolis, SPE (1996).

J.C. Moller and D. Lee, "Development of a Design and Manufacturing Course," Proc. ASEE Ann. Conf., Washington, DC, ASEE (1996).

R.T. Fox, J.C. Moller, L.A. Najmi and D. Lee, "A Structured Approach to Injection Molding of Powder-Binder Mixtures", Powder Injection Molding Symposium - 1992, P.H. Booker, J. Gaspervich and R.M. German, eds., Metal Powder Industries Federation, Princeton, NJ, (1992).

M.G. Dunn, J.C. Moller and R.C. Steele, "Development of a New High-Enthalpy Shock Tunnel", AIAA Thermophysics, Plasmadynamics and Lasers Conf., San Antonio, TX, 27-29 June 1988, AIAA paper 88-2782, (1988).

Agency reports

D.R. Shrader, J.C. Moller, "Simulation-Based Design System for Multi-Stage Manufacturing Processes," Contract No.: F33615-99-C-5708 Final Report, AFRL/MLMR, WPAFB, Dayton, OH, (2002).

D.R. Shrader, J.C. Moller, J.B. Stenger, "Simulation-based design system for Multi-Stage Manufacturing Processes," Contract no. F33615-98-C-5161 Final Report, AFRL/MLMR, WPAFB, Dayton, OH, (1999).

J.C. Moller and M.G. Dunn, "Dust and Smoke Phenomenology Testing in a Gas Turbine Hot Section Simulation", DNA-TR-90-72-V2, (1989).

C. Padova, M.G. Dunn and J.C. Moller, "Dust Phenomenology Testing in the Hot-Section Simulator of an Allison T-56 Gas Turbine", Final Report 7389-A-1, Calspan Corp., Buffalo, NY, (1987).

Published Reviews

Manufacturing Processes and Systems by P.F Ostwald and J. Munoz, ASEE Mechanical Engineering News, http://www.me.memphis.edu/menews/menews.html, (1998).

Reviews for Publishers

G.E. Dieter, Engineering Design, A Materials and Processing Approach, 3rd ed., McGraw-Hill, (1999).

GRANTS

Principal Investigator - Modeling and Testing of Materials Undergoing Different Working Conditions in Manufacturing Processes, AFRL-STTR,
Phase II 2000-2002 $132,000.
Phase I 1998-1999 $30,084.

Improvement of Teaching of Polymer Structure and Properties, SPE PMAD. 1998, $1055.

Shoupp Award, Miami University, 1996, $2000.

Principal Investigator - "Design and Manufacturing Laboratory", 1993, NSF-Instrumentation and Laboratory Improvement, $70,904.

TEACHING & COURSE DEVELOPMENT

Miami University 95-present

Static Modeling
Planned and introduced design activities into course.

Mechanics of Materials
Planned and introduced design activities into course.

Engineering Materials
Developed hands-on laboratory experiences to enhance understanding of material classes and their properties. Laboratory topics include : visualization of crystal structures and defects, tensile testing, relaxation testing, viscosity measurement, relation among polymer density and cooling, thermal conductivity measurement, phase diagram construction, fatigue testing, and impact testing.

Manufacturing Processes
Developed hands-on laboratory experiments complemented by application of mathematical models of manufacturing processes. Processes included : Rolling, Bending, Thermoforming, Injection Molding, Casting, Forging, Welding, and Machining.

Computer-Aided Experimentation
Developed laboratory activities in sensor calibration, modeling of dynamic mechanical systems. Introduced multiple design projects involving sensing, control, and actuation.

Machine and Tool Design
Introduced new design projects dealing with both structural and tooling design.

Senior Design Project
Advised year long projects in such areas as : epoxy injection molds, neural networks to predict molded part quality, ergonomic design of a workspace for product assembly, methods for reclamation of scrap products.

R.P.I. 94-95

Design & Manufacturing Laboratory
Author of winning NSF-ILI program proposal. Preparation & planning for new course involving concurrent design & manufacture of a simple component using rapid prototyping & injection molding. Plastic mat'l. props., NC machining, SPC, inspection & testing.

R.P.I. 90-94

Teaching Assistant – Experimental Mechanics

ACADEMIC & PROFESSIONAL SERVICE

Chair, Electrical Engineering Faculty Search Committees, 2000-present. Led multiple searches for tenure track faculty.

Member and Chair, Promotion & Tenure Committee, 2001-present. Prepared annual written reviews of tenure-track faculty.

Member, EGR Academic Petition Committee, 1996-99, 2000-present. Ruled on student petitions for deviations from the curriculum.

Director, Manufacturing Processes Laboratory, Computer-Aided Experimentation Laboratory, Engineering Materials Laboratory. Various dates, 1997-present. Responsible for planning activities in these laboratories as well as planning and carrying out laboratory improvements.

Member and Leader, Course Design Thread Planning Teams, Various dates, 1997-present. Planned and carried out plans to link content among selected courses.

Department Library Liaison, 1995-present. Identified books for addition to library's collections in manufacturing topics. Conducted surveys to prioritize department's serials subscriptions.

Member, Petition Assessment Team, 1997-98. Assessed way in which transfer credit is given. Used results to identify and document ways in which our departmental petition system can be improved.

Member, EGR Faculty Search Committees 1997-98 and 1999-2000. Screened and interviewed applicants for tenure track positions in the Materials and Electronic/Controls areas.

Member, School of Applied Science team on Continuous Quality Improvement of Advising, 1996-97. We met several times during both semesters to collect information on advising practices in the SAS departments. Made presentation of findings to Division.

Member, SAS Strategic Planning Committee, 1996-97. Developed measurable goals for the Division to respond to historical trends in the marketplace.

Member, SAS Learning Technologies Team, 1995-96. Prepared and presented a faculty workshop on web page creation.

Member, Engineering Technology Department Internal Program Review Committee. 2002-present. Reviewed of all aspects of the Miami (Hamilton campus) Engineering Technology Department.

Member, Committee on Faculty Research, 2001-present. Reviewed faculty proposals for internal research funds as well as for university recognition awards.

Faculty Advisor, Miami University Society of Plastics Engineers Chapter. 1997-present. I founded this chapter. In 1998, we received recognition as a Miami University student organization.

Guest Lecturer & Lab Session Instructor, Chemistry department capstone course, Fall 1997 & Spring 1998.

Judge, Ohio Science Fair, Miami University, April 1996, 97, 99, 01, and 02.

Member, Education Committee of the Miami Valley Section of the Society of Plastics Engineers. 1995-present. Represent MU at chapter meetings, review student scholarship grant applications.

SOCIETY MEMBERSHIP SPE. ASME.

LICENSURE Registered Professional Engineer – State of Ohio.